

Abstract Submitted
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Calculated scission-neutron properties in agreement with experimental data on prompt neutrons NICOLAE CARJAN¹, National Institute of Physics and Nuclear Engineering, Bucharest, Romania, MARGARIT RIZEA, National Institute of Physics and Nuclear Engineering, Bucharest — The main properties of the neutrons released during the neck rupture and emitted immediately thereafter are calculated for ²³⁶U in the frame of the dynamical scission model [1, 2]. These properties are: the angular distribution with respect to the fission axis (calculated on spheres of radii R=30 fm and 40 fm at time T=4 × 10²¹ sec), the distribution of the average energies of neutrons emitted from each state (calculated for durations of the neck rupture T = 1 and 2 × 10²² sec) and the total neutron multiplicity (calculated for two values of the minimum neck-radius, 1.6 fm and 1.9 fm). They are compared with measurements of prompt fission neutrons during ²³⁵U(nth, f). The experimental trends are well reproduced, i.e., the focussing of the neutrons along the fission axis, the preference of emission from the light fragment, the range, slope and average value of the neutron energyspectrum and the average total neutron multiplicity. One can therefore not exclude that prompt fission neutrons and scission neutrons are one and the same.

[1] N. Carjan, M. Rizea, Int. J. Mod. Phys. E 21 (2012) 1250031.

[2] M. Rizea, N. Carjan, Nucl. Phys. A 909 (2013) 50-68

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